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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/898,558	07/02/2001	Jerzy Miernik	062891.0565	2727

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EXAMINER	
D AGOSTA, STEPHEN M	

ART UNIT	PAPER NUMBER
2683	2

DATE MAILED: 06/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/898,558	MIERNIK ET AL.	
	Examiner	Art Unit	
	Stephen M. D'Agosta	2683	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-25 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-25 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 02 July 2001 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

The abstract of the disclosure is objected to because the "title" of the application appears on the abstract page and should be removed. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-25 rejected under 35 U.S.C. 103(a) as being unpatentable over Khan et al. US 6,400,954 and further in view of Fan et al. US 6,408,005 (hereafter Khan and Fan).

As per claim 1, Khan teaches a method for supporting a plurality of service classes in a wireless/ATM network having sufficient and/or less sufficient resources/bandwidth based on their respective service class (C2, L65 to C3, L11, C3, L43-51 and figures 1-5) which reads on providing bandwidth to users based on "class" **but is silent on**

sharing over-allocated bandwidth between service classes comprising:

Transmitting traffic for a first service class in excess of bandwidth allocated to the first service class using unused bandwidth allocated to a second class, and

After transmitting traffic for a first service class in excess of bandwidth allocated to the first service class using unused bandwidth allocated to a second class, transmitting traffic for a third service class in unused bandwidth remaining in the second service class.

The examiner notes that Khan's disclosure of adapting the resources reads on Quality of Service (QoS) which is known in the art as dynamically adapting bandwidth based on class of service and data throughput requirements. Further to this point is statistical multiplexing which can adapt instantaneously how much bandwidth is provided to a user. Lastly, wireless ATM is known in the art and Khan and Fan (below) both disclose use of their inventions in ATM networks.

Fan teachs a dynamic rate controller scheduler (DRC scheduler, figure 3, #30) that achieves high utilization by guaranteeing a minimum throughput and fairly distributes unused bandwidth (abstract, figure 9 and C5, L38-63). Fan's teaching thus allows unused bandwidth from any service class to be given to another service class which reads on the above limitations that Khan is silent on.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that unused bandwidth can be used by any other service class(es) (eg. first/third), to provide means for optimal throughput by utilizing unused bandwidth.

As per claim 2, Khan in view of Fan teaches claim 1 **but is silent on** wherein the third service class comprises a lower priority than the first service class. Fan teaches that the DRC scheduler allocates unused bandwidth indiscriminately and can provide said unused bandwidth to any user/class of service that requires it (abstract teaches "...the distribution of unused bandwidth can be assigned flexibly, ie. need not be shared in proportion to the minimum throughput guarantees as in weighted fair share schedulers).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that the unused bandwidth can be assigned to lower priority user(s), to provide means for any user class to be given any unused bandwidth when required and available.

As per claim 3, Khan in view of Fan teaches claim 1 **but is silent on** wherein the second service class comprises a lower priority than the first service class. Fan teaches

that the DRC allocates unused bandwidth indiscriminately and can provide said unused bandwidth to any user/class of service that requires it (abstract teaches "...the distribution of unused bandwidth can be assigned flexibly, ie. need not be shared in proportion to the minimum throughput guarantees as in weighted fair share schedulers..").

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that the unused bandwidth can be assigned to lower priority user(s), to provide means for any user class to be given any unused bandwidth when required and available.

As per claim 4, Khan in view of Fan teaches claim 1 **but is silent on** wherein the second class comprises the lowest priority that has unused bandwidth. Fan teaches that the DRC allocates the unused bandwidth to any user/class of service that requires it (abstract teaches "...the distribution of unused bandwidth can be assigned flexibly, ie. need not be shared in proportion to the minimum throughput guarantees as in weighted fair share schedulers).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that any lowest class that has unused bandwidth can be used, to provide means for any user class' unused bandwidth to be allocated to another when required and available.

As per claims 5 and 6, Khan in view of Fan teaches claim 1/5 wherein the second class comprises non-bursty traffic or voice flows (C1, L5-35 teaches cell system supporting both voice and data as is also shown in figure 1, phone and/or laptop communicating with BSS #16 to PSTN, IP Network or X.25, see right side of figure 1). The examiner interprets figure 1 showing both phone and laptop as supporting non-bursty (voice) or bursty (data) traffic.

As per claim 7, Khan teaches a system for supporting a plurality of service classes in a wireless/ATM network having sufficient and/or less sufficient

resources/bandwidth based on their respective service class (C2, L65 to C3, L11, C3, L43-51 and figures 1-5) which reads on providing bandwidth to users based on "class" **but is silent on**

sharing over-allocated bandwidth between service classes comprising:

means for transmitting traffic for a first service class in excess of bandwidth allocated to the first service class using unused bandwidth allocated to a second class, and

means for, after transmitting traffic for a first service class in excess of bandwidth allocated to the first service class using unused bandwidth allocated to a second class, transmitting traffic for a third service class in unused bandwidth remaining in the second service class.

The examiner notes that Khan's disclosure of adapting the resources reads on Quality of Service (QoS) which is known in the art as dynamically adapting bandwidth based on class of service and data throughput requirements. Further to this point is statistical multiplexing which can adapt instantaneously how much bandwidth is provided to a user. Lastly, wireless ATM is known in the art and Khan and Fan (below) both disclose use of their inventions in ATM networks.

Fan teachs means (eg. a dynamic rate controller scheduler, figure 3, #30) that achieves high utilization by guaranteeing a minimum throughput and fairly distributes unused bandwidth (abstract, figure 9 and C5, L38-63). Fan's teaching thus allows unused bandwidth from any service class to be given to another service class which reads on the above limitations that Khan is silent on.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that unused bandwidth can be used by any other service class(es) (eg. first/third), to provide means for optimal throughput by utilizing unused bandwidth.

As per claim 8, Khan in view of Fan teaches claim 7 **but is silent on** wherein the third service class comprises a lower priority than the first service class. Fan teaches that the DRC allocates unused bandwidth indiscriminately and can provide said unused

bandwidth to any user/class of service that requires it (abstract teaches "...the distribution of unused bandwidth can be assigned flexibly, ie. need not be shared in proportion to the minimum throughput guarantees as in weighted fair share schedulers).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that the unused bandwidth can be assigned to lower priority user(s), to provide means for any user class to be given any unused bandwidth when required and available.

As per claim 9, Khan in view of Fan teaches claim 7 **but is silent on** wherein the second service class comprises a lower priority than the first service class. Fan teaches that the DRC allocates unused bandwidth indiscriminately and can provide said unused bandwidth to any user/class of service that requires it (abstract teaches "...the distribution of unused bandwidth can be assigned flexibly, ie. need not be shared in proportion to the minimum throughput guarantees as in weighted fair share schedulers..").

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that the unused bandwidth can be assigned to lower priority user(s), to provide means for any user class to be given any unused bandwidth when required and available.

As per claim 10, Khan in view of Fan teaches claim 7 **but is silent on** wherein the second class comprises the lowest priority that has unused bandwidth. Fan teaches that the DRC allocates the unused bandwidth to any user/class of service that requires it (abstract teaches "...the distribution of unused bandwidth can be assigned flexibly, ie. need not be shared in proportion to the minimum throughput guarantees as in weighted fair share schedulers).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that any lowest class that has unused bandwidth can be used, to provide means for any user class' unused bandwidth to be allocated to another when required and available.

As per claims 11 and 12, Khan in view of Fan teaches claim 7/11 wherein the second class comprises non-bursty traffic or voice flows (C1, L5-35 teaches cell system supporting both voice and data as is also shown in figure 1, phone and/or laptop communicating with BSS #16 to PSTN, IP Network or X.25, see right side of figure 1). The examiner interprets figure 1 showing both phone and laptop as supporting non-bursty (voice) or bursty (data) traffic.

As per claim 13, Khan teaches a system for supporting a plurality of service classes in a wireless/ATM network having sufficient and/or less sufficient resources/bandwidth based on their respective service class (C2, L65 to C3, L11, C3, L43-51 and figures 1-5) which reads on providing bandwidth to users based on "class" **but is silent on**

Logic encoded into media for sharing over-allocated bandwidth between service classes comprising:

transmit traffic for a first service class in excess of bandwidth allocated to the first service class using unused bandwidth allocated to a second class, and

after transmitting traffic for a first service class in excess of bandwidth allocated to the first service class using unused bandwidth allocated to a second class, transmitting traffic for a third service class in unused bandwidth remaining in the second service class.

The examiner notes that Khan's disclosure of adapting the resources reads on Quality of Service (QoS) which is known in the art as dynamically adapting bandwidth based on class of service and data throughput requirements. Further to this point is statistical multiplexing which can adapt instantaneously how much bandwidth is provided to a user. Lastly, wireless ATM is known in the art and Khan and Fan (below) both disclose use of their inventions in ATM networks.

Fan teachs a dynamic rate controller scheduler (figure 3, #30) comprising logic encoded into media/hardware/software (C8, L10 to C9, L16) that achieves high utilization by guaranteeing a minimum throughput and fairly distributes unused bandwidth (abstract, figure 9 and C5, L38-63). Fan's teaching thus allows unused

bandwidth from any service class to be given to another service class which reads on the above limitations that Khan is silent on.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that unused bandwidth can be used by any other service class(es) (eg. first/third), to provide means for optimal throughput by utilizing unused bandwidth.

As per claim 14, Khan in view of Fan teaches claim 13 **but is silent on** wherein the third service class comprises a lower priority than the first service class. Fan teaches that the DRC allocates unused bandwidth indiscriminately and can provide said unused bandwidth to any user/class of service that requires it (abstract teaches "...the distribution of unused bandwidth can be assigned flexibly, ie. need not be shared in proportion to the minimum throughput guarantees as in weighted fair share schedulers).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that the unused bandwidth can be assigned to lower priority user(s), to provide means for any user class to be given any unused bandwidth when required and available.

As per claim 15, Khan in view of Fan teaches claim 13 **but is silent on** wherein the second service class comprises a lower priority than the first service class. Fan teaches that the DRC allocates unused bandwidth indiscriminately and can provide said unused bandwidth to any user/class of service that requires it (abstract teaches "...the distribution of unused bandwidth can be assigned flexibly, ie. need not be shared in proportion to the minimum throughput guarantees as in weighted fair share schedulers..").

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that the unused bandwidth can be assigned to lower priority user(s), to provide means for any user class to be given any unused bandwidth when required and available.

As per claim 16, Khan in view of Fan teaches claim 13 **but is silent on** wherein the second class comprises the lowest priority that has unused bandwidth. Fan teaches that the DRC allocates the unused bandwidth to any user/class of service that requires it (abstract teaches "...the distribution of unused bandwidth can be assigned flexibly, ie. need not be shared in proportion to the minimum throughput guarantees as in weighted fair share schedulers).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that any lowest class that has unused bandwidth can be used, to provide means for any user class' unused bandwidth to be allocated to another when required and available.

As per claims 17 and 18, Khan in view of Fan teaches claim 13/17 wherein the second class comprises non-bursty traffic or voice flows (C1, L5-35 teaches cell system supporting both voice and data as is also shown in figure 1, phone and/or laptop communicating with BSS #16 to PSTN, IP Network or X.25, see right side of figure 1). The examiner interprets figure 1 showing both phone and laptop as supporting non-bursty (voice) or bursty (data) traffic.

As per claim 19, Khan teaches a system for supporting a plurality of service classes in a wireless/ATM network having sufficient and/or less sufficient resources/bandwidth based on their respective service class (C2, L65 to C3, L11, C3, L43-51 and figures 1-5) which reads on providing bandwidth to users based on "class" **but is silent on**

Logic encoded into media for sharing over-allocated bandwidth between service classes comprising:

transmit traffic for a first service class in excess of bandwidth allocated to the first service class using unused bandwidth allocated to a second class, and

after transmitting traffic for a first service class in excess of bandwidth allocated to the first service class using unused bandwidth allocated to a second class,

transmitting traffic for the first service class in unused bandwidth remaining in the third service class.

The examiner notes that Khan's disclosure of adapting the resources reads on Quality of Service (QoS) which is known in the art as dynamically adapting bandwidth based on class of service and data throughput requirements. Further to this point is statistical multiplexing which can adapt instantaneously how much bandwidth is provided to a user. Lastly, wireless ATM is known in the art and Khan and Fan (below) both disclose use of their inventions in ATM networks.

Fan teachs a dynamic rate controller scheduler (figure 3, #30) comprising logic encoded into media/hardware/software (C8, L10 to C9, L16) that achieves high utilization by guaranteeing a minimum throughput and fairly distributes unused bandwidth (abstract, figure 9 and C5, L38-63). Fan's teaching thus allows unused bandwidth from any service class to be given to any other service class which reads on the above limitations that Khan is silent on – eg. any service class needing bandwidth can take from any other service class' bandwidth that is not being used.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that unused bandwidth can be used by any other service class(es) (eg. first/third), to provide means for optimal throughput by utilizing unused bandwidth.

As per claim 20, Khan in view of Fan teaches claim 19 **but is silent on** wherein the third service class comprises a lower priority than the first service class. Fan teaches that the DRC allocates unused bandwidth indiscriminately and can provide said unused bandwidth to any user/class of service that requires it (abstract teaches "...the distribution of unused bandwidth can be assigned flexibly, ie. need not be shared in proportion to the minimum throughput guarantees as in weighted fair share schedulers).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that the unused bandwidth can be assigned to lower priority user(s), to provide means for any user class to be given any unused bandwidth when required and available.

As per claim 21, Khan in view of Fan teaches claim 19 **but is silent on** wherein the second service class comprises a lower priority than the first service class. Fan teaches that the DRC allocates unused bandwidth indiscriminately and can provide said unused bandwidth to any user/class of service that requires it (abstract teaches "...the distribution of unused bandwidth can be assigned flexibly, ie. need not be shared in proportion to the minimum throughput guarantees as in weighted fair share schedulers..").

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that the unused bandwidth can be assigned to lower priority user(s), to provide means for any user class to be given any unused bandwidth when required and available.

As per claim 22, Khan in view of Fan teaches claim 19 **but is silent on** wherein the second class comprises the lowest priority that has unused bandwidth. Fan teaches that the DRC allocates the unused bandwidth to any user/class of service that requires it (abstract teaches "...the distribution of unused bandwidth can be assigned flexibly, ie. need not be shared in proportion to the minimum throughput guarantees as in weighted fair share schedulers).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that any lowest class that has unused bandwidth can be used, to provide means for any user class' unused bandwidth to be allocated to another when required and available.

As per claims 23 and 24, Khan in view of Fan teaches claim 19/23 wherein the second class comprises non-bursty traffic or voice flows (C1, L5-35 teaches cell system supporting both voice and data as is also shown in figure 1, phone and/or laptop communicating with BSS #16 to PSTN, IP Network or X.25, see right side of figure 1). The examiner interprets figure 1 showing both phone and laptop as supporting non-bursty (voice) or bursty (data) traffic.

As per claim 25, Khan teaches a method a method for supporting a plurality of service classes in a wireless/ATM network having sufficient and/or less sufficient resources/bandwidth based on their respective service class (C2, L65 to C3, L11, C3, L43-51 and figures 1-5) which reads on providing bandwidth to users based on "class" such as:

Transmitting expedited forwarding (EF) traffic in bandwidth allocated to EF traffic,

Transmitting assured forwarding (AF) traffic in bandwidth allocated to AF traffic,

Transmitting best effort (BE) traffic in bandwidth allocated to BE traffic,

but is silent on

sharing over-allocated bandwidth between service classes comprising:

Transmitting AF traffic in excess of bandwidth allocated to AF traffic using unused bandwidth allocated to voice traffic if excess voice bandwidth is available,

Transmitting excess AF traffic in excess bandwidth allocated to BE if there is no excess voice bandwidth and if excess BE bandwidth is available

Transmitting excess AF traffic in excess bandwidth allocated to EF traffic if there is no excess voice bandwidth and there is no excess BE bandwidth and if there is excess EF bandwidth

Transmitting BE traffic in excess of bandwidth to BE traffic using excess boice bandwidth if excess voice bandwidth is available

Transmitting excess BE traffic in excess bandwidth allocated to AF traffic if there is no excess voice bandwidth and excess AF bandwidth is available,

Transmitting excess BE traffic in excess EF bandwidth if there is no excess voice bandwidth and there is no excess AF bandwidth and excess EF bandwidth is available,

Transmitting EF traffic in excess of bandwidth allocated to BE traffic using excess voice bandwidth if excess voice bandwidth is available,

Transmitting excess EF traffic in excess BE bandwidth if there is no excess voice bandwidth and excess bandwidth is available,

Transmitting excess EF traffic in excess AF bandwidth if there is on excess voice bandwidth and there is no excess bandwidth and excess AF bandwidth is available.

The examiner notes that Khan's disclosure of adapting the resources reads on Quality of Service (QoS) which is known in the art as dynamically adapting bandwidth based on class of service and data throughput requirements. Further to this point is statistical multiplexing which can adapt instantaneously how much bandwidth is provided to a user. Lastly, wireless ATM is known in the art and Khan and Fan (below) both disclose use of their inventions in ATM networks.

Fan teachs a dynamic rate controller scheduler (DRC scheduler, figure 3, #30) that achieves high utilization by guaranteeing a minimum throughput and fairly distributes unused bandwidth (abstract, figure 9 and C5, L38-63). Fan's teaching thus allows unused bandwidth from any service class to be given to another service class which reads on the above limitations that Khan is silent on. Hence, the ability for Fan's invention to essentially utilize bandwidth from any service class for any other user provides motivation for either excess bandwidth to be used for the same or different service class (ie. AF can use excess AF bandwidth or excess voice, BE or EF bandwidth as written above). More simply put, Fan teaches a broader design which reads on the applicant's narrower design.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that unused bandwidth can be used by any other user, to provide means for optimal throughput by utilizing unused bandwidth.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

1. Li et al. US 6,560,230
2. Scholefield et al. US 6,216,006
3. Beshai et al. US 2002/0131363
4. Pilar et al. US 6,438,106

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. D'Agosta whose telephone number is 703-306-5426. The examiner can normally be reached on M-F, 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Trost can be reached on 703-308-5318. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SMD